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ABSTRACT OF THE DISCLOSURE

A process for producing for producing a rigid reticulated article, includes: (a) providing a first dispersion of a ceramic or metal powder, a binder, and a solvent; (b) providing a reticulated substrate which has open, interconnected porosity; (c) contacting the reticulated substrate with the first dispersion to coat the substrate with the dispersion to form a first coating; (d) drying the coated reticulated substrate; (e) contacting the reticulated substrate with one or more additional dispersions to form one or more additional coatings wherein the composition of the one or more additional coatings are the same or different from each other and the first coating; (f) drying the additional coating between the steps of contacting; (g) heating the coated reticulated substrate at a time and temperature sufficient to pyrolyze any organic components; and (h) sintering to form a ceramic or metal or composite reticulated article. In another aspect, the binder becomes solvent-insoluble and flexible upon drying. According to this aspect, one or more additional coatings may optionally be used. In another aspect, a method for forming a ceramic article useful as a bone substitute and having an outer surface defining a shape having a bulk volume and having open, interconnecting openings extending throughout the volume and opening through the surface, includes, providing an organic open-pore structure, coating surfaces of pores of the structure with a ceramic slip, pyrolyzing the organic structure to leave a ceramic structure having struts defining a plurality of interconnecting interstices, and providing within the interstices an porous osteoconductive composition exposed to the interconnecting openings. In a preferred embodiment, the ceramic slip includes a strong, supportive ceramic material and a separate osteoconductive material. In another aspect, a rigid reticulated article includes, a first sintered ceramic or metal or composite material having an outer surface defining a shape having a bulk volume, interconnecting openings extending throughout the volume and opening through the surface, and struts bounding the interconnecting openings, wherein the material has at least 20 openings per inch.